

SPECIFICATION AMENDMENTS

Please replace the paragraph beginning on page 5, line 7, as follows:

The air gap 10 is formed by spacing the first and second end faces 12 and 14 from each other along their respective lengths. The gap width will normally be substantially uniform over the length of the end faces 12 and 14, but variable spacing might be desirable in some applications. The selected spacing between the end faces 12 and 14 defines the gap width of the air gap 10. The gap width is selected to provide a required spark gap breakover voltage under design conditions of temperature, humidity and air pressure, as can be determined using conventional techniques. ~~In Fig. 1, an~~ An exemplary gap width might be of 0.005 inches, but other values could also be used, as described in more detail below.

Please replace the paragraph beginning on page 6, line 11, as follows:

In cable television applications, the frequencies span from approximately 5 MHz to 1 GHz. The capacitance of a spark gap used in such applications will preferably need to be held to less than a picofarad, or other circuitry will need to be added to compensate. Surge compliance testing of cable television equipment is often done by applying a 6 kV, 200 A, 100 kHz ringwave. If the gap width is maintained below 0.005 inches, ~~as shown in Fig. 1,~~ a breakover voltage of less than approximately 700 volts can be achieved. This is shown in the plot 16 of Fig. 3, in which the dotted line divisions along the vertical axis represent 1000 volt increments and the dotted line divisions along the horizontal axis represent 2.0 microsecond increments. If the initial 2700 volt spike of very short duration is ignored, it will be seen that the maximum amplitude of the remaining ring-shaped waveform is approximately 700 volts. Circuit design and component selection can be made to easily tolerate these excursions. With a gap width of 0.005 inches, achieving capacitance levels of less than one picofarad will require that the gap

length be no more than 0.25 inches. Thus, the gap length will be larger than the gap width by no more than a factor of one hundred.

Please replace the paragraph beginning on page 6, line 29, as follows:

Fig. 4 illustrates use of the spark gap 2 on a PCB 20 designed for a cable television application. The PCB 20 includes a substrate 22 made from fiberglass or other suitable material. Plural circuit traces, exemplified by reference numeral 24, are formed on the substrate 22. The circuit traces 24 are formed from copper or other suitable material and are shaped using an etching process or other suitable technique. A plurality of circuit components C1, C2, C3, C4, C5 L1, L2, and U1 are mounted on the PCB 20 and appropriate electrical connections are made to the circuit traces 24. The spark gap 2 is formed between an RF (radio frequency) input 26 and an RF output 28 using a very wide circuit trace pattern (e.g., 0.125 - 0.25 inches) and a very small gap width (e.g., 0.0015-0.005 inches). The spark gap 2 includes two air gaps 30 and 32. It will be seen that the spark gap 2 allows voltage surges to be shunted around the remaining circuit components in order to protect those circuits from damage.

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